SEQUENCE LISTING

<110> Jerome B. Posner
Josep O. Dalmau
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<120> Ma FAMILY POLYPEPTIDES AND ANTI-Ma ANTIBODIES

<130> 2581.1004-004

<150> 09/189,527
<151> 1998-11-10

<160> 14

<170> FastSEQ for Windows Version 4.0

<210> 1
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gtctttgcgg atgtccacg 19

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<223> n = A, T, C or G

<221> misc_feature
<222> 1699
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cagcgtcccc gagctcggct ccgagtgcac ctacggactg actgtggggg cagagaaggg 120
cgagatcagg actctgtctt tgttaatcgt gactgcatga aggtcgcctc cctcgggcct 180
acttggtggg agtgtctggt attgttctaa ggccaggagc acggtgagcc acagtctgtt 240

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ggtagaattt ggcgtcttga tagttgagaa a atg gcg atg aca ctg ttg gaa     292
                                   Met Ala Met Thr Leu Leu Glu
                                    1               5

gac tgg tgc cgg ggg atg gat gtg aac tcc cag aga act ctg tta gtc     340
Asp Trp Cys Arg Gly Met Asp Val Asn Ser Gln Arg Thr Leu Leu Val
         10                  15                  20

tgg ggc atc cca gtg aac tgt gat gag gct gaa atc gaa gag acc ctc     388
Trp Gly Ile Pro Val Asn Cys Asp Glu Ala Glu Ile Glu Glu Thr Leu
     25                  30                  35

cag gct gcg atg ccc cag gtc tcc tac cga atg ctt ggg aga atg ttc     436
Gln Ala Ala Met Pro Gln Val Ser Tyr Arg Met Leu Gly Arg Met Phe
 40                  45                  50                  55

tgg agg gaa gaa aat gcg aaa gca gcc tta tta gag ctc act ggc gct     484
Trp Arg Glu Glu Asn Ala Lys Ala Ala Leu Leu Glu Leu Thr Gly Ala
                 60                  65                  70

gta gat tac gcc gcg atc ccc agg gag atg ccg ggc aaa gga ggg gtc     532
Val Asp Tyr Ala Ala Ile Pro Arg Glu Met Pro Gly Lys Gly Gly Val
             75                  80                  85

tgg aaa gtg tta ttt aag ccc cca act tct gat gct gaa ttt tta gaa     580
Trp Lys Val Leu Phe Lys Pro Pro Thr Ser Asp Ala Glu Phe Leu Glu
         90                  95                  100

aga ttg cac ctc ttc cta gct aga gag ggg tgg acc gtg caa gat gtt     628
Arg Leu His Leu Phe Leu Ala Arg Glu Gly Trp Thr Val Gln Asp Val
    105                 110                 115

gcc cgt gtc ctt ggg ttt cag aac cct act ccg acc ccg ggc cca gag     676
Ala Arg Val Leu Gly Phe Gln Asn Pro Thr Pro Thr Pro Gly Pro Glu
120                 125                 130                 135

atg cca gca gag atg cta aac tat att ttg gat aat gtt att cag cct     724
Met Pro Ala Glu Met Leu Asn Tyr Ile Leu Asp Asn Val Ile Gln Pro
                140                 145                 150

ctt gtt gag tcc ata tgg tac aag agg ctg aca ctt ttc tcg ggg aag     772
Leu Val Glu Ser Ile Trp Tyr Lys Arg Leu Thr Leu Phe Ser Gly Lys
            155                 160                 165

gga cat ccc agg gcc tgg aga gga aac ttt gat ccc tgg ctg gag cac     820
Gly His Pro Arg Ala Trp Arg Gly Asn Phe Asp Pro Trp Leu Glu His
        170                 175                 180

act aat gag gtc cta gag gag tgg cag gtg tcc gat gta gaa aag agg     868
Thr Asn Glu Val Leu Glu Glu Trp Gln Val Ser Asp Val Glu Lys Arg
    185                 190                 195

cgg cgg ttg atg gag agt ctt aga ggc ccc gcc gct gat gtt att cgc     916
Arg Arg Leu Met Glu Ser Leu Arg Gly Pro Ala Ala Asp Val Ile Arg
200                 205                 210                 215

atc ctt aag tcc aac aac ccc gcg ata acc act gcc gaa tgc ctg aag     964
Ile Leu Lys Ser Asn Asn Pro Ala Ile Thr Thr Ala Glu Cys Leu Lys
                220                 225                 230
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```
gcg ctt gag cag gtg ttt ggg agc gtt gag agc tct agg gat gcc cag     1012
Ala Leu Glu Gln Val Phe Gly Ser Val Glu Ser Ser Arg Asp Ala Gln
            235                 240                 245

atc aaa ttt ctg aac act tat cag aac ccg gga gaa aaa ttg tct gct     1060
Ile Lys Phe Leu Asn Thr Tyr Gln Asn Pro Gly Glu Lys Leu Ser Ala
        250                 255                 260

tat gtc att cgt ctg gag cct ctg cta cag aag gtg gta gag aag ggg     1108
Tyr Val Ile Arg Leu Glu Pro Leu Leu Gln Lys Val Val Glu Lys Gly
    265                 270                 275

gcc att gat aaa gat aat gtg aac cag gcc cgc cta gag cag gtc att     1156
Ala Ile Asp Lys Asp Asn Val Asn Gln Ala Arg Leu Glu Gln Val Ile
280                 285                 290                 295

gcc ggg gcc aac cac agc ggg gcc atc cga agg cag ctg tgg ctt acc     1204
Ala Gly Ala Asn His Ser Gly Ala Ile Arg Arg Gln Leu Trp Leu Thr
                300                 305                 310

ggg gct ggg gaa ggg cca ggc ccc aaa cct ctt tca gtt gct ggt gca     1252
Gly Ala Gly Glu Gly Pro Gly Pro Lys Pro Leu Ser Val Ala Gly Ala
            315                 320                 325

gat ccg tgaggaggaa gcccagggag gaggaggagg aggctgaggc caccccttctg     1308
Asp Pro

cagttaggcc tggaagggca cttctgagtg ccaggaaagg cagctttagt gcagacctag 1368
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caatgcaaac atcttatttc tcatctttaa acatgtcgac cagtttaatt gaaaagtatt 1908
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tctcattgca taagatacag atgtaaattg catggagagg ttgatatgca cctgtacagt 2028
aattcactcc cccatttcac ttctttgtca gagaatagtt cttgttcata ctgagtgttc 2088
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<210> 4
<211> 329
<212> PRT
<213> homo sapiens

<400> 4

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Met Ala Met Thr Leu Leu Glu Asp Trp Cys Arg Gly Met Asp Val Asn
 1               5                  10                  15
Ser Gln Arg Thr Leu Leu Val Trp Gly Ile Pro Val Asn Cys Asp Glu
            20                  25                  30
Ala Glu Ile Glu Glu Thr Leu Gln Ala Ala Met Pro Gln Val Ser Tyr
        35                  40                  45
Arg Met Leu Gly Arg Met Phe Trp Arg Glu Glu Asn Ala Lys Ala Ala
    50                  55                  60
```

```
Leu Leu Glu Leu Thr Gly Ala Val Asp Tyr Ala Ala Ile Pro Arg Glu
65                  70                  75                  80
Met Pro Gly Lys Gly Gly Val Trp Lys Val Leu Phe Lys Pro Pro Thr
                85                  90                  95
Ser Asp Ala Glu Phe Leu Glu Arg Leu His Leu Phe Leu Ala Arg Glu
            100                 105                 110
Gly Trp Thr Val Gln Asp Val Ala Arg Val Leu Gly Phe Gln Asn Pro
        115                 120                 125
Thr Pro Thr Pro Gly Pro Glu Met Pro Ala Glu Met Leu Asn Tyr Ile
    130                 135                 140
Leu Asp Asn Val Ile Gln Pro Leu Val Glu Ser Ile Trp Tyr Lys Arg
145                 150                 155                 160
Leu Thr Leu Phe Ser Gly Lys Gly His Pro Arg Ala Trp Arg Gly Asn
                165                 170                 175
Phe Asp Pro Trp Leu Glu His Thr Asn Glu Val Leu Glu Glu Trp Gln
            180                 185                 190
Val Ser Asp Val Glu Lys Arg Arg Arg Leu Met Glu Ser Leu Arg Gly
        195                 200                 205
Pro Ala Ala Asp Val Ile Arg Ile Leu Lys Ser Asn Asn Pro Ala Ile
    210                 215                 220
Thr Thr Ala Glu Cys Leu Lys Ala Leu Glu Gln Val Phe Gly Ser Val
225                 230                 235                 240
Glu Ser Ser Arg Asp Ala Gln Ile Lys Phe Leu Asn Thr Tyr Gln Asn
                245                 250                 255
Pro Gly Glu Lys Leu Ser Ala Tyr Val Ile Arg Leu Glu Pro Leu Leu
            260                 265                 270
Gln Lys Val Val Glu Lys Gly Ala Ile Asp Lys Asp Asn Val Asn Gln
        275                 280                 285
Ala Arg Leu Glu Gln Val Ile Ala Gly Ala Asn His Ser Gly Ala Ile
    290                 295                 300
Arg Arg Gln Leu Trp Leu Thr Gly Ala Gly Glu Gly Pro Gly Pro Lys
305                 310                 315                 320
Pro Leu Ser Val Ala Gly Ala Asp Pro
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<210> 5
<211> 18
<212> DNA
<213> homo sapiens

<400> 5
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<210> 6
<211> 615
<212> DNA
<213> homo sapiens

<220>
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<222> (1)...(585)

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Pro Leu Ala Leu Leu Glu Asp Trp Cys Arg Ile Met Ser Val Asp Glu
 1   5   10   15

cag aag tca ctg atg gtt acg ggg ata ccg gcg gac ttt gag gag gct 96

```
Gln Lys Ser Leu Met Val Thr Gly Ile Pro Ala Asp Phe Glu Glu Ala
            20                  25                  30

gag att cag gag gtc ctt cag gag act tta aag tct ctg ggc agg tat   144
Glu Ile Gln Glu Val Leu Gln Glu Thr Leu Lys Ser Leu Gly Arg Tyr
        35                  40                  45

aga ctg ctt ggc aag ata ttc cgg aag cag gag aat gcc aat gct gtc   192
Arg Leu Leu Gly Lys Ile Phe Arg Lys Gln Glu Asn Ala Asn Ala Val
    50                  55                  60

tta cta gag ctt ctg gaa gat act gat gtc tcg gcc att ccc agt gag   240
Leu Leu Glu Leu Leu Glu Asp Thr Asp Val Ser Ala Ile Pro Ser Glu
65                  70                  75                  80

gtc cag gga aag ggg ggt gtc tgg aaa gtg atc ttt aag acc cct aat   288
Val Gln Gly Lys Gly Gly Val Trp Lys Val Ile Phe Lys Thr Pro Asn
                85                  90                  95

cag gac act gag ttt ctt gaa aga ttg aac ctg ttt cta gaa aaa gag   336
Gln Asp Thr Glu Phe Leu Glu Arg Leu Asn Leu Phe Leu Glu Lys Glu
            100                 105                 110

ggg cag acg gtc tcg ggt atg ttt cga gcc ctg ggg cag gag gcg ttg   384
Gly Gln Thr Val Ser Gly Met Phe Arg Ala Leu Gly Gln Glu Ala Leu
        115                 120                 125

tct cca gcc aca gtg ccc tgc atc tca cca gaa tta ctg gcc cat ttg   432
Ser Pro Ala Thr Val Pro Cys Ile Ser Pro Glu Leu Leu Ala His Leu
    130                 135                 140

ttg gga cag gca atg gca cat gcg cct cag ccc ctg cta ccc atg aga   480
Leu Gly Gln Ala Met Ala His Ala Pro Gln Pro Leu Leu Pro Met Arg
145                 150                 155                 160

tac cgg aaa ctg cga gta ttc tca ggg agt gct gtc cca gcc cca gag   528
Tyr Arg Lys Leu Arg Val Phe Ser Gly Ser Ala Val Pro Ala Pro Glu
                165                 170                 175

gaa gag tcc ttt gag gtc tgg ttg gaa cag gcc acg gag ata gtc aaa   576
Glu Glu Ser Phe Glu Val Trp Leu Glu Gln Ala Thr Glu Ile Val Lys
            180                 185                 190

gag tgg cct tgaacacaac caaaaaaaaa aaaaaaaaag                     615
Glu Trp Pro
        195
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<210> 7
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<213> homo sapiens

<400> 7

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Pro Leu Ala Leu Leu Glu Asp Trp Cys Arg Ile Met Ser Val Asp Glu
 1               5                  10                  15
Gln Lys Ser Leu Met Val Thr Gly Ile Pro Ala Asp Phe Glu Glu Ala
            20                  25                  30
```

```
Glu Ile Gln Glu Val Leu Gln Glu Thr Leu Lys Ser Leu Gly Arg Tyr
        35                  40                  45
Arg Leu Leu Gly Lys Ile Phe Arg Lys Gln Glu Asn Ala Asn Ala Val
    50                  55                  60
Leu Leu Glu Leu Leu Glu Asp Thr Asp Val Ser Ala Ile Pro Ser Glu
65                  70                  75                  80
Val Gln Gly Lys Gly Gly Val Trp Lys Val Ile Phe Lys Thr Pro Asn
                85                  90                  95
Gln Asp Thr Glu Phe Leu Glu Arg Leu Asn Leu Phe Leu Glu Lys Glu
            100                 105                 110
Gly Gln Thr Val Ser Gly Met Phe Arg Ala Leu Gly Gln Glu Ala Leu
        115                 120                 125
Ser Pro Ala Thr Val Pro Cys Ile Ser Pro Glu Leu Leu Ala His Leu
    130                 135                 140
Leu Gly Gln Ala Met Ala His Ala Pro Gln Pro Leu Leu Pro Met Arg
145                 150                 155                 160
Tyr Arg Lys Leu Arg Val Phe Ser Gly Ser Ala Val Pro Ala Pro Glu
                165                 170                 175
Glu Glu Ser Phe Glu Val Trp Leu Glu Gln Ala Thr Glu Ile Val Lys
            180                 185                 190
Glu Trp Pro
        195
```


<210> 8
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<212> DNA
<213> homo sapiens

<220>
<221> CDS
<222> (2)...(448)

<400> 8

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g gac ctc atg cac ata gtg cag gca gac aac ccg tcc atc agt gta gaa 49
  Asp Leu Met His Ile Val Gln Ala Asp Asn Pro Ser Ile Ser Val Glu
   1               5                  10                  15

gag tgt ttg gag gcc ttt aag caa gtg ttt ggg agc cta gag agc cgc   97
Glu Cys Leu Glu Ala Phe Lys Gln Val Phe Gly Ser Leu Glu Ser Arg
             20                  25                  30

agg aca gcc cag gtg agg tat ctg aag ccc tat cag gag gaa gga gag   145
Arg Thr Ala Gln Val Arg Tyr Leu Lys Pro Tyr Gln Glu Glu Gly Glu
         35                  40                  45

aag gtc tca gcc tat gtg tta cgg cta gaa acc ctg ctc cgg aga gcg   193
Lys Val Ser Ala Tyr Val Leu Arg Leu Glu Thr Leu Leu Arg Arg Ala
     50                  55                  60

gtg gag aaa cgc gcc atc cct cgg cgt att gcg gac cag gtc cgc ctg   241
Val Glu Lys Arg Ala Ile Pro Arg Arg Ile Ala Asp Gln Val Arg Leu
 65                  70                  75                  80

gag cag gtc atg gct ggg gcc act ctt aac cag atg ctg tgg tgc cgg   289
Glu Gln Val Met Ala Gly Ala Thr Leu Asn Gln Met Leu Trp Cys Arg
                 85                  90                  95

ctt agg gag ctg aag gat cag ggc ccg ccc ccc agc ttc ctt gag cta   337
```

Leu Arg Glu Leu Lys Asp Gln Gly Pro Pro Pro Ser Phe Leu Glu Leu
100 105 110

atg aag gta ata cgg gaa gaa gag gag gaa gag gcc tcc ttt gag aat 385
Met Lys Val Ile Arg Glu Glu Glu Glu Glu Glu Ala Ser Phe Glu Asn
115 120 125

gag agt atc gaa gag cca gag gaa cga gat ggc tat ggc cgc tgg aat 433
Glu Ser Ile Glu Glu Pro Glu Glu Arg Asp Gly Tyr Gly Arg Trp Asn
130 135 140

cat gag gga gac gac tgaaaaccac ctgggggcag gacccacagc cagtgggcta 488
His Glu Gly Asp Asp
145

agacctttaa aaaatttttt tctttaatgt atgggactga aatcaaacca tgaaagccaa 548
ttattgacct tccttccttc cttccttccc tcccttcctc cttctctcct tctctccttt 608
tttttttttt tttttaaacc ctgttcttgg gtgggtgtgg gtataatact aagttgagat 668
gatatcattt acgggggaag gcgctttgtg aagtaggcct tatttctctt gtcctttcgt 728
acagggagga atttgaagta gatagaaacc gacctggatt actccggtct gaactcagat 788
cacgtaggac tttaatcgtt gaacaaacga acctttaata gcggg 833

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<212> PRT
<213> homo sapiens

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Asp Leu Met His Ile Val Gln Ala Asp Asn Pro Ser Ile Ser Val Glu
1 5 10 15
Glu Cys Leu Glu Ala Phe Lys Gln Val Phe Gly Ser Leu Glu Ser Arg
20 25 30
Arg Thr Ala Gln Val Arg Tyr Leu Lys Pro Tyr Gln Glu Glu Gly Glu
35 40 45
Lys Val Ser Ala Tyr Val Leu Arg Leu Glu Thr Leu Leu Arg Arg Ala
50 55 60
Val Glu Lys Arg Ala Ile Pro Arg Arg Ile Ala Asp Gln Val Arg Leu
65 70 75 80
Glu Gln Val Met Ala Gly Ala Thr Leu Asn Gln Met Leu Trp Cys Arg
85 90 95
Leu Arg Glu Leu Lys Asp Gln Gly Pro Pro Pro Ser Phe Leu Glu Leu
100 105 110
Met Lys Val Ile Arg Glu Glu Glu Glu Glu Glu Ala Ser Phe Glu Asn
115 120 125
Glu Ser Ile Glu Glu Pro Glu Glu Arg Asp Gly Tyr Gly Arg Trp Asn
130 135 140
His Glu Gly Asp Asp
145

<210> 10
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<212> DNA
<213> homo sapiens

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<400> 10

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g gtc cag gga aag ggg ggt gtc tgg aag gtg atc ttt aag acc cct aat 49
  Val Gln Gly Lys Gly Gly Val Trp Lys Val Ile Phe Lys Thr Pro Asn
   1               5                  10                  15

cag gac act gag ttt ctt gaa aga ttg aac ctg ttt cta gaa aaa gag   97
Gln Asp Thr Glu Phe Leu Glu Arg Leu Asn Leu Phe Leu Glu Lys Glu
             20                  25                  30

ggg cag acg gtc tcg ggt atg ttt cga gcc ctg ggg cag gag ggc gtg   145
Gly Gln Thr Val Ser Gly Met Phe Arg Ala Leu Gly Gln Glu Gly Val
         35                  40                  45

tct cca gcc aca gtg ccc tgc atc tca cca gaa tta ctg gcc cat ttg   193
Ser Pro Ala Thr Val Pro Cys Ile Ser Pro Glu Leu Leu Ala His Leu
     50                  55                  60

ttg gga cag gca atg gca cat gcg cct cag ccc ctg cta ccc atg aga   241
Leu Gly Gln Ala Met Ala His Ala Pro Gln Pro Leu Leu Pro Met Arg
 65                  70                  75                  80

tac cgg aaa ctg cga gta ttc tca ggg agt gct gtc cca gcc cca gag   289
Tyr Arg Lys Leu Arg Val Phe Ser Gly Ser Ala Val Pro Ala Pro Glu
                 85                  90                  95

gaa gag tcc ttt gag gtc tgg ttg gaa cag gcc acg gag ata gtc aaa   337
Glu Glu Ser Phe Glu Val Trp Leu Glu Gln Ala Thr Glu Ile Val Lys
            100                 105                 110

gag tgg cca gta aca gag gca gaa aag aaa agg tgg ctg gcg gaa agc   385
Glu Trp Pro Val Thr Glu Ala Glu Lys Lys Arg Trp Leu Ala Glu Ser
        115                 120                 125

ctg cgg ggc cct gcc ctg gac ctc atg cac ata gtg cag gca gac aac   433
Leu Arg Gly Pro Ala Leu Asp Leu Met His Ile Val Gln Ala Asp Asn
    130                 135                 140

ccg tcc atc agt gta gaa gag tgt ttg gag gcc ttt aag caa gtg ttt   481
Pro Ser Ile Ser Val Glu Glu Cys Leu Glu Ala Phe Lys Gln Val Phe
145                 150                 155                 160

ggg agc cta gag agc cgc agg aca gcc cag gtg agg tat ctg aag acc   529
Gly Ser Leu Glu Ser Arg Arg Thr Ala Gln Val Arg Tyr Leu Lys Thr
                165                 170                 175

tat cag gag gaa gga gag aag gtc tca gcc tat gtg tta cgg cta gaa   577
Tyr Gln Glu Glu Gly Glu Lys Val Ser Ala Tyr Val Leu Arg Leu Glu
            180                 185                 190

acc ctg ctc cgg aaa gcg gtg gag aaa cgc gcc atc cct cgg cgt att   625
Thr Leu Leu Arg Lys Ala Val Glu Lys Arg Ala Ile Pro Arg Arg Ile
        195                 200                 205

gcg gac cag gtc cgc ctg gag cag gtc atg gct ggg gcc act ctt aac   673
Ala Asp Gln Val Arg Leu Glu Gln Val Met Ala Gly Ala Thr Leu Asn
    210                 215                 220

cag atg ctg tgg tgc cgg ctt agg gag ctg aag gat cag ggc ccg ccc   721
Gln Met Leu Trp Cys Arg Leu Arg Glu Leu Lys Asp Gln Gly Pro Pro
```

```
225                 230                 235                 240

ccc agc ttc ctt gag cta atg aag gta ata cgg gaa gaa gag gag gaa   769
Pro Ser Phe Leu Glu Leu Met Lys Val Ile Arg Glu Glu Glu Glu Glu
                245                 250                 255

gag gcc tcc ttt gag aat gag agt atc gaa gag cca gag gaa cga gat   817
Glu Ala Ser Phe Glu Asn Glu Ser Ile Glu Glu Pro Glu Glu Arg Asp
            260                 265                 270

ggc tat ggc cgc tgg aat cat gag gga gac gac tgaaaaccac ctgggggcag 870
Gly Tyr Gly Arg Trp Asn His Glu Gly Asp Asp
        275                 280

gacccacagc cagtgggcta agacctttaa aaaatttttt tctttaatgt atgggactga 930
aatcaaacca tgaaagccaa ttattgacct tccttccttc cttcctttcc ttcccttcct 990
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tgaaggaatc tgaaacactt gtacttccaa ttttctttaa ataatcccaa atagaccaga 1530
attggcccat accatagaag aaagaattgg cagtcaaaaa aaaa                   1574

<210> 11
<211> 283
<212> PRT
<213> homo sapiens

<400> 11
Val Gln Gly Lys Gly Gly Val Trp Lys Val Ile Phe Lys Thr Pro Asn
 1               5                  10                  15
Gln Asp Thr Glu Phe Leu Glu Arg Leu Asn Leu Phe Leu Glu Lys Glu
            20                  25                  30
Gly Gln Thr Val Ser Gly Met Phe Arg Ala Leu Gly Gln Glu Gly Val
        35                  40                  45
Ser Pro Ala Thr Val Pro Cys Ile Ser Pro Glu Leu Leu Ala His Leu
    50                  55                  60
Leu Gly Gln Ala Met Ala His Ala Pro Gln Pro Leu Leu Pro Met Arg
65                  70                  75                  80
Tyr Arg Lys Leu Arg Val Phe Ser Gly Ser Ala Val Pro Ala Pro Glu
                85                  90                  95
Glu Glu Ser Phe Glu Val Trp Leu Glu Gln Ala Thr Glu Ile Val Lys
            100                 105                 110
Glu Trp Pro Val Thr Glu Ala Glu Lys Lys Arg Trp Leu Ala Glu Ser
        115                 120                 125
Leu Arg Gly Pro Ala Leu Asp Leu Met His Ile Val Gln Ala Asp Asn
    130                 135                 140
Pro Ser Ile Ser Val Glu Glu Cys Leu Glu Ala Phe Lys Gln Val Phe
145                 150                 155                 160
Gly Ser Leu Glu Ser Arg Arg Thr Ala Gln Val Arg Tyr Leu Lys Thr
                165                 170                 175
Tyr Gln Glu Glu Gly Glu Lys Val Ser Ala Tyr Val Leu Arg Leu Glu
            180                 185                 190
Thr Leu Leu Arg Lys Ala Val Glu Lys Arg Ala Ile Pro Arg Arg Ile
        195                 200                 205
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```
Ala Asp Gln Val Arg Leu Glu Gln Val Met Ala Gly Ala Thr Leu Asn
    210                 215                 220
Gln Met Leu Trp Cys Arg Leu Arg Glu Leu Lys Asp Gln Gly Pro Pro
225                 230                 235                 240
Pro Ser Phe Leu Glu Leu Met Lys Val Ile Arg Glu Glu Glu Glu Glu
                245                 250                 255
Glu Ala Ser Phe Glu Asn Glu Ser Ile Glu Glu Pro Glu Glu Arg Asp
            260                 265                 270
Gly Tyr Gly Arg Trp Asn His Glu Gly Asp Asp
        275                 280
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<210> 12
<211> 2248
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<220>
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<221> misc_feature
<222> (1)...(2248)
<223> n = A, T, C or G

<221> misc_feature
<222> 1561, 1573
<223> n = A,T,C or G

<400> 12

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                               Met Pro Leu Thr Leu Leu Gln Asp Trp
                                1               5

tgt cgg ggg gaa cac ctg aac acc cgg agg tgc atg ctc atc ctg ggg   102
Cys Arg Gly Glu His Leu Asn Thr Arg Arg Cys Met Leu Ile Leu Gly
 10                  15                  20                  25

atc ccc gag gac tgt ggc gag gat gag ttt gag gag aca ctc cag gag   150
Ile Pro Glu Asp Cys Gly Glu Asp Glu Phe Glu Glu Thr Leu Gln Glu
                30                  35                  40

gct tgc agg cac ctg ggc aga tac agg gtg att ggc agg atg ttt agg   198
Ala Cys Arg His Leu Gly Arg Tyr Arg Val Ile Gly Arg Met Phe Arg
            45                  50                  55

agg gag gag aac gcc cag gcg att cta ctg gag ctg gca caa gat atc   246
Arg Glu Glu Asn Ala Gln Ala Ile Leu Leu Glu Leu Ala Gln Asp Ile
        60                  65                  70

gac tat gct ttg ctc cca agg gaa ata cca gga aag ggg ggg ccc tgg   294
Asp Tyr Ala Leu Leu Pro Arg Glu Ile Pro Gly Lys Gly Gly Pro Trp
    75                  80                  85

gaa gtg att gta aaa ccc cgt aac tca gat ggg gaa ttt ctc aac aga   342
Glu Val Ile Val Lys Pro Arg Asn Ser Asp Gly Glu Phe Leu Asn Arg
 90                  95                  100                 105

ctg aac cgc ttc tta gag gag gag agg cgg acc gtg tca gat atg aac   390
```

```
Leu Asn Arg Phe Leu Glu Glu Glu Arg Arg Thr Val Ser Asp Met Asn
                110                 115                 120

cga gtc ctc ggg tcg gac acc aat tgt tcg gct cca aga gtg act ata   438
Arg Val Leu Gly Ser Asp Thr Asn Cys Ser Ala Pro Arg Val Thr Ile
            125                 130                 135

tca cca gag ttc tgg acc tgg gcc cag act ctg ggg gca gca gtg cag   486
Ser Pro Glu Phe Trp Thr Trp Ala Gln Thr Leu Gly Ala Ala Val Gln
        140                 145                 150

cct ctg cta gaa caa atg ttg tac cga gaa cta aga gtg ttt tct ggg   534
Pro Leu Leu Glu Gln Met Leu Tyr Arg Glu Leu Arg Val Phe Ser Gly
    155                 160                 165

aac acc ata tcc atc cca ggt gca ctg gcc ttt gat gcc tgg ctt gag   582
Asn Thr Ile Ser Ile Pro Gly Ala Leu Ala Phe Asp Ala Trp Leu Glu
170                 175                 180                 185

cac acc act gag atg cta cag atg tgg cag gtg ccc gag ggg gaa aag   630
His Thr Thr Glu Met Leu Gln Met Trp Gln Val Pro Glu Gly Glu Lys
                190                 195                 200

agg cgg agg ctg atg gaa tgc tta cgg ggc cct gct ctc cag gtg gtc   678
Arg Arg Arg Leu Met Glu Cys Leu Arg Gly Pro Ala Leu Gln Val Val
            205                 210                 215

agt ggg ctc cgg gcc agc aat gct tcc ata act gtg gag gag tgc ctg   726
Ser Gly Leu Arg Ala Ser Asn Ala Ser Ile Thr Val Glu Glu Cys Leu
        220                 225                 230

gct gcc ttg cag cag gtg ttc gga cct gtg gag agc cat aaa att gcc   774
Ala Ala Leu Gln Gln Val Phe Gly Pro Val Glu Ser His Lys Ile Ala
    235                 240                 245

cag gtg aag ttg tgt aaa gcc tat cag gag gca gga gag aaa gta tct   822
Gln Val Lys Leu Cys Lys Ala Tyr Gln Glu Ala Gly Glu Lys Val Ser
250                 255                 260                 265

agc ttt gtg tta cgt ttg gaa ccc ctg ctc caa aga gct gta gaa aac   870
Ser Phe Val Leu Arg Leu Glu Pro Leu Leu Gln Arg Ala Val Glu Asn
                270                 275                 280

aat gtg gta tca cgt aga aac gtg aat cag act cgc ctg aaa cga gtc   918
Asn Val Val Ser Arg Arg Asn Val Asn Gln Thr Arg Leu Lys Arg Val
            285                 290                 295

tta agt ggg gcc acc ctt cct gac aaa ctc cga gat aag ctt aag ctg   966
Leu Ser Gly Ala Thr Leu Pro Asp Lys Leu Arg Asp Lys Leu Lys Leu
        300                 305                 310

atg aaa cag cga agg aag cct cct ggt ttc ctg gcc ctg gtg aag ctc  1014
Met Lys Gln Arg Arg Lys Pro Pro Gly Phe Leu Ala Leu Val Lys Leu
    315                 320                 325

ctg cgt gag gag gag gaa tgg gag gcc act tta ggt cca gat agg gag  1062
Leu Arg Glu Glu Glu Glu Trp Glu Ala Thr Leu Gly Pro Asp Arg Glu
330                 335                 340                 345
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agt ctg gag ggg ctg gaa gta gcc cca agg cca cct gcc agg atc act   1110
Ser Leu Glu Gly Leu Glu Val Ala Pro Arg Pro Pro Ala Arg Ile Thr
                350                 355                 360

ggg gtt ggg gca gta cct ctc cct gcc tct ggc aac agt ttt gat gcg   1158
Gly Val Gly Ala Val Pro Leu Pro Ala Ser Gly Asn Ser Phe Asp Ala
            365                 370                 375

agg cct tcc cag ggc tac cgg cgc cgg agg ggc aga ggc caa cac cga   1206
Arg Pro Ser Gln Gly Tyr Arg Arg Arg Arg Gly Arg Gly Gln His Arg
        380                 385                 390

agg ggt ggt gtg gca agg gct ggc tct cga ggc tca aga aaa cgg aaa   1254
Arg Gly Gly Val Ala Arg Ala Gly Ser Arg Gly Ser Arg Lys Arg Lys
    395                 400                 405

cgc cac aca ttc tgc tat agc tgt ggg gaa gac ggc cac atc agg gta   1302
Arg His Thr Phe Cys Tyr Ser Cys Gly Glu Asp Gly His Ile Arg Val
410                 415                 420                 425

cag tgc atc aac ccc tcc aac ctg ctc ttg gta aag cag aag aaa cag   1350
Gln Cys Ile Asn Pro Ser Asn Leu Leu Leu Val Lys Gln Lys Lys Gln
                430                 435                 440

gct gca gtt gag tcg gga aac ggg aac tgg gct tgg gac aag agc cat   1398
Ala Ala Val Glu Ser Gly Asn Gly Asn Trp Ala Trp Asp Lys Ser His
            445                 450                 455

ccc aag tcc aag gcc aag taggctcggg agaacagggc aacatttcct          1446
Pro Lys Ser Lys Ala Lys
        460

accacagccc aaggagacaa aagagatatt gggaggaggg gaaagagaag cccagacaaa 1506
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<210> 13
<211> 463
<212> PRT
<213> homo sapiens

<400> 13

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Met Pro Leu Thr Leu Leu Gln Asp Trp Cys Arg Gly Glu His Leu Asn
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Thr Arg Arg Cys Met Leu Ile Leu Gly Ile Pro Glu Asp Cys Gly Glu
            20                  25                  30
Asp Glu Phe Glu Glu Thr Leu Gln Glu Ala Cys Arg His Leu Gly Arg
        35                  40                  45
```

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Tyr Arg Val Ile Gly Arg Met Phe Arg Arg Glu Glu Asn Ala Gln Ala
    50                  55                  60
Ile Leu Leu Glu Leu Ala Gln Asp Ile Asp Tyr Ala Leu Leu Pro Arg
65                  70                  75                  80
Glu Ile Pro Gly Lys Gly Gly Pro Trp Glu Val Ile Val Lys Pro Arg
                85                  90                  95
Asn Ser Asp Gly Glu Phe Leu Asn Arg Leu Asn Arg Phe Leu Glu Glu
            100                 105                 110
Glu Arg Arg Thr Val Ser Asp Met Asn Arg Val Leu Gly Ser Asp Thr
        115                 120                 125
Asn Cys Ser Ala Pro Arg Val Thr Ile Ser Pro Glu Phe Trp Thr Trp
    130                 135                 140
Ala Gln Thr Leu Gly Ala Ala Val Gln Pro Leu Leu Glu Gln Met Leu
145                 150                 155                 160
Tyr Arg Glu Leu Arg Val Phe Ser Gly Asn Thr Ile Ser Ile Pro Gly
                165                 170                 175
Ala Leu Ala Phe Asp Ala Trp Leu Glu His Thr Thr Glu Met Leu Gln
            180                 185                 190
Met Trp Gln Val Pro Glu Gly Glu Lys Arg Arg Arg Leu Met Glu Cys
        195                 200                 205
Leu Arg Gly Pro Ala Leu Gln Val Val Ser Gly Leu Arg Ala Ser Asn
    210                 215                 220
Ala Ser Ile Thr Val Glu Glu Cys Leu Ala Ala Leu Gln Gln Val Phe
225                 230                 235                 240
Gly Pro Val Glu Ser His Lys Ile Ala Gln Val Lys Leu Cys Lys Ala
                245                 250                 255
Tyr Gln Glu Ala Gly Glu Lys Val Ser Ser Phe Val Leu Arg Leu Glu
            260                 265                 270
Pro Leu Leu Gln Arg Ala Val Glu Asn Asn Val Val Ser Arg Arg Asn
        275                 280                 285
Val Asn Gln Thr Arg Leu Lys Arg Val Leu Ser Gly Ala Thr Leu Pro
    290                 295                 300
Asp Lys Leu Arg Asp Lys Leu Lys Leu Met Lys Gln Arg Arg Lys Pro
305                 310                 315                 320
Pro Gly Phe Leu Ala Leu Val Lys Leu Leu Arg Glu Glu Glu Glu Trp
                325                 330                 335
Glu Ala Thr Leu Gly Pro Asp Arg Glu Ser Leu Glu Gly Leu Glu Val
            340                 345                 350
Ala Pro Arg Pro Pro Ala Arg Ile Thr Gly Val Gly Ala Val Pro Leu
        355                 360                 365
Pro Ala Ser Gly Asn Ser Phe Asp Ala Arg Pro Ser Gln Gly Tyr Arg
    370                 375                 380
Arg Arg Arg Gly Arg Gly Gln His Arg Arg Gly Gly Val Ala Arg Ala
385                 390                 395                 400
Gly Ser Arg Gly Ser Arg Lys Arg Lys Arg His Thr Phe Cys Tyr Ser
                405                 410                 415
Cys Gly Glu Asp Gly His Ile Arg Val Gln Cys Ile Asn Pro Ser Asn
            420                 425                 430
Leu Leu Leu Val Lys Gln Lys Lys Gln Ala Ala Val Glu Ser Gly Asn
        435                 440                 445
Gly Asn Trp Ala Trp Asp Lys Ser His Pro Lys Ser Lys Ala Lys
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ggcggcgcgg cggcgggcct ggtcgaatta gaatttaaat actctgagca ccatgacact 180
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